SEPTEMBER 2019 Update (2QCY2019)

RF Front Ends for Mobile Devices (RFFE) Forecast

Major changes to the forecast this quarter include:

1. Table 1-1: We have updated our expectations for mm-wave devices, with a very limited handset forecast. This is contrary to current thinking in the market, as many OEMs are designing mm-wave handsets currently. But we believe that consumer sales of mm-wave handsets are likely to be weak, and mobile operators may push mobile hotspots instead. Note that our forecast for mobile hotspots is strong, so if the mix of handsets and hotspots is not correct in our forecast, the number of RFFE devices should still be fairly accurate.

2. Table 1-6: We added 7 million hotspots in the 5G>20 GHz category, based on the coverage of 30 US cities by Verizon, plus smaller coverage by AT&T and Japanese operators. Note that growth to greater than 20 million devices per year will happen after operators begin to offer significant subsidies or free hotspots, probably in 2022-2023.

3. Table 4-1: We've maintained some strong price erosion in the market, which almost completely offsets content growth during 2019. The RFFE market will grow with 5G handsets in 2020 and beyond, but the short term growth is weak.

4. Table 4-5: Overall market shares were updated based on quarterly earnings announcements by several vendors.

   a. Skyworks has lost market share in mobile RFFE, reporting only $483M for 2Q19 for the mobile market.

   b. Qorvo reported good numbers again, with $556M in estimated mobile RFFE revenue.

   c. Broadcom's wireless business is getting smaller as high-performance players like Qorvo encroach on their premium segment. We estimate the Broadcom RFFE sales for Q2 at $700-750M.

   d. Murata may see an upside from the ban on shipments from US companies to Huawei, but we don't see the upside yet in Q2.

5. Pages 5-7: Quarterly market shares have been updated for filters, PAs, and modules that constitute the majority of the RFFE market, to match design win info (teardowns) with revenue announcements.

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